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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DANIEL E. GRUPP

Appeal 2009-2613
Application 09/612,607
Technology Center 2800

Decided:¹ April 30, 2009

Before JAMES D. THOMAS, LEE E. BARRETT, and TERRY J. OWENS,
Administrative Patent Judges.

OWENS, *Administrative Patent Judge.*

DECISION ON APPEAL
STATEMENT OF THE CASE

The Appellant appeals under 35 U.S.C. § 134(a) from the Examiner's

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the Decided Date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

rejection of claims 23-25, which are all of the pending claims. We have jurisdiction under 35 U.S.C. § 6(b).

The Invention

The Appellant claims a method which, the Appellant states, “relates to tunneling transistor devices having tunnel junctions” (Spec. 2:5-6).

Claim 23 is illustrative:

23. A method, comprising forming a conduction path between a pair of tunnel junctions each having a resistance less than or equal to approximately a quantum resistance by shifting energy states of an island formed of a material having a non-uniform density of such energy states characterized by separated conduction and valence bands that behave as continuous energy bands, the island being disposed between the tunnel junctions.

The References

Ellenbogen	6,339,227 B1	Jan. 15, 2002 (filed Feb. 1, 1999)
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The Rejection

Claims 23-25 stand rejected under 35 U.S.C. § 102(e) over Ellenbogen.

OPINION

We reverse the Examiner’s rejection.

Issue

Has the Appellant shown reversible error in the Examiner’s determination that Ellenbogen discloses separated conduction and valence bands that behave as continuous energy bands?

Findings of Fact

Ellenbogen discloses “a monomolecular transistor and monomolecular digital logic structures utilizing a molecular transistor to provide switching and power gain” (col. 1, ll. 6-9). The Examiner relies (Ans. 3-4) upon Ellenbogen’s Figures 3A to 3D which show donor (115) and acceptor (114) complexes separated by a central barrier insulator (120) (col. 10, ll. 50-51; col. 11, ll. 21-22). Ellenbogen discloses (col. 10, l. 66 – col. 11, l. 4):

[A]s illustrated in FIGS. 3C and 3D, the application of a voltage to the gate contact counteracts the intrinsic bias established by the dopant substituents. By that action, the valence pi-orbitals 125, 125’ and 126, 126’ are placed in resonance to thereby allow electrons to flow from the source contact to the drain contact.

Analysis

The Examiner has the initial burden of establishing a prima facie case of anticipation by pointing out where all of the claim limitations appear in a single reference. *See In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990); *In re King*, 801 F.2d 1324, 1327 (Fed. Cir. 1986).

The Appellant argues that “the molecular island described by Ellenbogen is not ‘an island formed of a material having a non-uniform density of energy states characterized by separated conduction and valence bands that behave as continuous energy bands” (Br. 3).

The Examiner argues that “fig. 3D of Ellenbogen shows that energy level 125’ and energy level 126’ are at the same level or continuous” (Ans. 4).

“[D]uring examination proceedings, claims are given their broadest reasonable interpretation consistent with the specification.” *In re*

Translogic Tech., Inc., 504 F.3d 1249, 1256 (Fed. Cir. 2007) (quoting *In re Hyatt*, 211 F.3d 1367, 1372 (Fed. Cir. 2000)).

The Appellant's Specification discloses (Spec. 13:17-22):

As is known in the art, a spacing between the energy levels 58 is dependent upon the size of the island 26 and the material comprising the island. In the present transistor, the island 26 is designed so that the energy levels 58 are separated in energy by less than about 100 meV, more preferably, less than 50 meV and most preferably less than 25 meV. This is preferred in the present transistor because it assures that, at room temperature, the valence and conduction bands behave as approximately continuous bands.

The Examiner has not established that Ellenbogen's pi orbitals 125, 125', 126 and 126' have energy levels separated by less than about 100 meV, or explained why, absent energy levels having that maximum separation, those pi orbitals are conduction and valence bands that behave as continuous energy bands, as the term "continuous energy bands" would have been most broadly construed by one of ordinary skill in the art in view of the Appellant's Specification.

Conclusion of Law

The Appellant has shown reversible error in the Examiner's determination that Ellenbogen discloses separated conduction and valence bands that behave as continuous energy bands.

DECISION/ORDER

The rejection of claims 23-25 under 35 U.S.C. § 102(e) over Ellenbogen is reversed.

It is ordered that the Examiner's decision is reversed.

REVERSED

Appeal 2009-2613
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